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10/811,782	03/29/2004	Sutherland Cook Ellwood JR.	20028-7003	9480

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EXAMINER	
RUDE, TIMOTHY L	

ART UNIT	PAPER NUMBER
2871	

MAIL DATE	DELIVERY MODE
05/28/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/811,782	ELLWOOD, SUTHERLAND COOK	
	Examiner	Art Unit	
	TIMOTHY RUDE	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13,27-40 and 67-78* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13,27-40 and 67-78* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20061108*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims

1. Claims 27 and 40 are amended by Applicant. Claims 14-26 and 41-66 are canceled by Applicant. Claims 67-78 are added.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

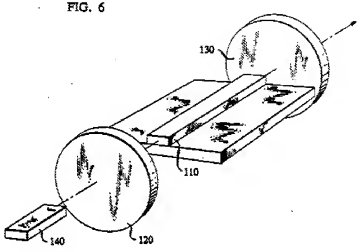
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-9, 12, 27-35, 38, 40, and 67-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dillon, Jr. et al (Dillon) USPAT 5,031,983.

As to claims 1, 2, 27, 28, 40, 67, and 68, Dillon discloses improvements to a prior art integrated magneto-optic device [col. 1, line 10 through col. 4, line 56] that is a radiation wave intensity modulator, comprising: a first element for producing a wave component from a radiation wave [light source, 140, in Figure 6], said wave component having a polarization property wherein said polarization property is one polarization from a set of orthogonal polarizations [col. 1, lines 21 and 22 and items 120 and 130 in

Figure 6]; an optical transport for receiving said wave component, said transport having a waveguiding region [YIG doped fiber],

FIG. 6



and one or more guiding regions coupled to said waveguiding region [regions between the polarizers and the YIG doped light guide in the integrated form of the device, col. 1, lines 52-60]; a transport influencer [magnetic coil, col. 7, lines 34-38], operatively coupled to said optical transport and having at least a portion integrated with one or more guiding regions of said one or more guiding regions [integrated form per col. 1, lines 52-60], for affecting said polarization property of said wave component responsive to a control signal; and a second element for interacting with said affected wave component wherein an intensity of said wave component is varied responsive to said control signal [signal resulting in electromagnetic coil producing a field strength of 30 Oe, col. 7, lines 34-38]; wherein said first element and said second element are polarization filters [col. 1, lines 21 and 22], wherein said output wave component may be extinguished [90 degrees to polarizer, col. 1, line 40].

Dillon does not explicitly disclose (illustrate) all of the details of the structure of the fully integrated device [see schematic representation at Figure 6].

Dillon teaches that all of the features may be incorporated in a fully integrated device [col. 1, lines 52-66] to serve as a building block for integrated optical devices.

Dillon is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add all of the details of the above structure into a fully integrated device to serve as a building block for integrated optical devices.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Dillon to contain all of the details of the above structure in a fully integrated device of Dillon to serve as a building block for integrated optical devices.

Please note, that if something is integrated as a finished device, it inherently must have been integrated during manufacture, but something integrated during manufacture might not remain integrated in the final device. Examiner considers newly added limitations drawn to "during manufacture" to actually broaden claims to the point of being almost not further limiting.

Please note that variable isolators have long been well known to function as modulators, for convenience, please reference cited but not applied Tomita et al (Tomita) USPAT 5,245,465 [Abstract, Title, and entire disclosure]. The device structure limitations of Applicant's intended use limitations have been fully considered and are considered fully met by the applied prior art.

As to claims 3, 69, and 29, Dillon discloses the modulator of claim 1 wherein said elements are integrated into said transport [integrated form of the device, col. 1, lines 52-66].

As to claims 4, 70, and 30, Dillon discloses the modulator of claim 1 wherein said influencer produces a controllable magnetic field parallel to a propagation direction of said wave through said transport to alter said polarization property [col. 7, lines 34-38].

As to claims 5, 71, and 31, Dillon discloses the modulator of claim 1 wherein said influencer alters said polarization property by changing a rotation angle of said wave component in a range from about zero degrees to about ninety degrees [col. 1, line 40].

As to claims 6, 72, and 32, Dillon discloses the modulator of claim 1 wherein said transport is a fiber waveguide including a core and a cladding corresponding to one or more guiding regions of said one or more guiding regions and wherein said influencer includes a magnetic material integrated with said cladding [multi-layered YIG, col. 2, lines 55-65].

As to claims 7, 73, and 33, Dillon discloses the modulator of claim 6 wherein said magnetic material includes permanent magnetic material [YIG, col. 1, lines 20-25].

As to claims 8, 74, and 34, Dillon discloses the modulator of claim 6 wherein said magnetic material is selectively magnetized responsive to an electric current [magnetic coil, col. 7, lines 34-38].

As to claims 9, 75, and 35, Dillon discloses the modulator of claim 6 wherein said magnetic material is integrated into said fiber waveguide [col. 1, lines 20-25 and col. 2, lines 55-65].

As to claims 12 and 38, Dillon discloses the modulator of claim 1 wherein said output wave component may be extinguished [90 degrees to polarizer, col. 1, line 40].

3. Claims 10, 11, 13, 36, 37, 39, 76, 77, and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dillon.

As to claims 10, 11, 13, 36, 37, 39, 76, 77, and 78, Dillon discloses the modulator of claim 1.

Dillon does not explicitly disclose said set of orthogonal polarization includes right hand circular polarization and left hand circular polarization.

Dillon teaches reciprocal and anti-reciprocal light-rotating devices as devices suitable for the intended use as modulators [MPEP 2144.07]. Also, use of circular

polarization vs linear polarization as an alternate mode suitable for light modulation has long been very well known in the art.

Dillon is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add right and left hand circular polarizers with or without crossed transmission orientation as an art recognized means suitable for polarizers and analyzers in a modulator.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Dillon with the right and left hand circular polarizers with or without crossed transmission orientation [crossed or aligned transmission orientation] of Dillon as an art recognized means suitable for polarizers and analyzers in a modulator.

4. Claims 10, 11, 13, 36, 37, 39, 76, 77, and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dillon in view of Conner et al (Conner) USPAT 5,548,422.

As to claims 10, 11, 13, 36, 37, 39, 76, 77, and 78, Dillon discloses the modulator of claim 1.

Dillon does not explicitly disclose said set of orthogonal polarization includes right hand circular polarization and left hand circular polarization.

Conner teaches reciprocal and anti-reciprocal light-rotating devices as devices suitable for improving the contrast of the modulation [more uniform black, i.e., more total

extinction in the off state, col. 13, lines 14-29]. Also, use of circular polarization vs linear polarization (or in addition to linear polarization) for polarizers and analyzers has long been very well known in the art.

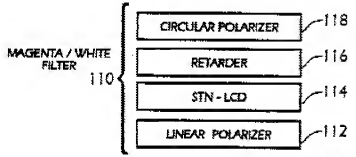


Fig. 11

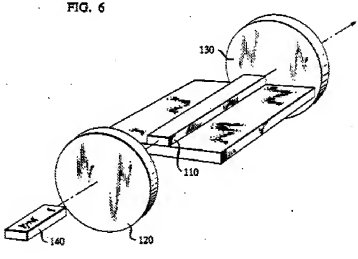
Conner is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add right and left hand circular polarizers with or without crossed transmission orientation to improve contrast of the modulation.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Dillon with the right and left hand circular polarizers with or without crossed transmission orientation of Conner to improve contrast of the modulation.

5. Claims 27-40 and 67-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dillon in view of Conner.

As to claims 27, 28, 40, 67, and 68, Dillon discloses improvements to a prior art integrated magneto-optic device [col. 1, line 10 through col. 4, line 56] that is a radiation wave intensity modulator, comprising: a first element for producing a wave component from a radiation wave [light source, 140, in Figure 6], said wave component having a polarization property wherein said polarization property is one polarization from a set of orthogonal polarizations [col. 1, lines 21 and 22 and items 120 and 130 in Figure 6]; an optical transport for receiving said wave component, said transport having a waveguiding region [YIG doped fiber],

FIG. 6



and one or more guiding regions coupled to said waveguiding region [regions between the polarizers and the YIG doped light guide in the integrated form of the device, col. 1, lines 52-60]; a transport influencer [magnetic coil, col. 7, lines 34-38],

operatively coupled to said optical transport and having at least a portion integrated with one or more guiding regions of said one or more guiding regions [integrated form per col. 1, lines 52-60], for affecting said polarization property of said wave component responsive to a control signal; and a second element for interacting with said affected wave component wherein an intensity of said wave component is varied responsive to said control signal [signal resulting in electromagnetic coil producing a field strength of 30 Oe, col. 7, lines 34-38]; wherein said first element and said second element are polarization filters [col. 1, lines 21 and 22], wherein said output wave component may be extinguished [90 degrees to polarizer, col. 1, line 40].

Dillon does not explicitly disclose (illustrate) all of the details of the structure of the fully integrated device [see schematic representation at Figure 6].

Dillon teaches that all of the features may be incorporated in a fully integrated device [col. 1, lines 52-66] to serve as a building block for integrated optical devices.

Dillon is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add all of the details of the above structure into a fully integrated device to serve as a building block for integrated optical devices.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Dillon to contain all of the details of the above structure in a fully integrated device of Dillon to serve as a building block for integrated optical devices.

Please note, that if something is integrated as a finished device, it inherently must have been integrated during manufacture, but something integrated during manufacture

might not remain integrated in the final device. Examiner considers newly added limitations drawn to "during manufacture" to actually broaden claims to the point of being almost not further limiting.

Please note that variable isolators have long been well known to function as modulators, for convenience, please reference cited but not applied Tomita et al (Tomita) USPAT 5,245,465 [Abstract, Title, and entire disclosure]. The device structure limitations of Applicant's intended use limitations have been fully considered and are considered fully met by the applied prior art.

Dillon does not explicitly disclose said set of orthogonal polarization includes right hand circular polarization and left hand circular polarization.

Conner teaches reciprocal and anti-reciprocal light-rotating devices as devices suitable for improving the contrast of the modulation [more uniform black, i.e., more total extinction in the off state, col. 13, lines 14-29; Applicant's "extinquishes said output wave component"]. Also, use of circular polarization vs linear polarization (or in addition to linear polarization) for polarizers and analyzers has long been very well known in the art.

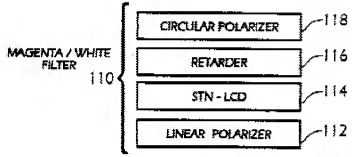


Fig. 11

Conner is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add right and left hand circular polarizers with or without crossed transmission orientation to improve contrast [Applicant's extinquishes] of the modulation.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Dillon with the right and left hand circular polarizers with or without crossed transmission orientation of Conner to improve contrast of the modulation.

As to claims 69, and 29, Dillon discloses the modulator of claim 1 wherein said elements are integrated into said transport [integrated form of the device, col. 1, lines 52-66].

As to claims 70, and 30, Dillon discloses the modulator of claim 1 wherein said influencer produces a controllable magnetic field parallel to a propagation direction of said wave through said transport to alter said polarization property [col. 7, lines 34-38].

As to claims 71, and 31, Dillon discloses the modulator of claim 1 wherein said influencer alters said polarization property by changing a rotation angle of said wave component in a range from about zero degrees to about ninety degrees [col. 1, line 40].

As to claims 72, and 32, Dillon discloses the modulator of claim 1 wherein said transport is a fiber waveguide including a core and a cladding corresponding to one or more guiding regions of said one or more guiding regions and wherein said influencer includes a magnetic material integrated with said cladding [multi-layered YIG, col. 2, lines 55-65].

As to claims 73, and 33, Dillon discloses the modulator of claim 6 wherein said magnetic material includes permanent magnetic material [YIG, col. 1, lines 20-25].

As to claims 74, and 34, Dillon discloses the modulator of claim 6 wherein said magnetic material is selectively magnetized responsive to an electric current [magnetic coil, col. 7, lines 34-38].

As to claims 75, and 35, Dillon discloses the modulator of claim 6 wherein said magnetic material is integrated into said fiber waveguide [col. 1, lines 20-25 and col. 2, lines 55-65].

As to claim 38, Dillon discloses the modulator of claim 1 wherein said output wave component may be extinguished [90 degrees to polarizer, col. 1, line 40].

6. Claims 36, 37, 39, 76, 77, and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dillon in view of Conner.

As to claims 36, 37, 39, 76, 77, and 78, Dillon discloses the modulator of claim 1.

Dillon does not explicitly disclose said set of orthogonal polarization includes right hand circular polarization and left hand circular polarization.

Dillon teaches reciprocal and anti-reciprocal light-rotating devices as devices suitable for the intended use as modulators [MPEP 2144.07]. Also, use of circular polarization vs linear polarization as an alternate mode suitable for light modulation has long been very well known in the art.

Dillon is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add right and left hand circular polarizers with or without

crossed transmission orientation as an art recognized means suitable for polarizers and analyzers in a modulator.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Dillon with the right and left hand circular polarizers with or without crossed transmission orientation [crossed or aligned transmission orientation] of Dillon as an art recognized means suitable for polarizers and analyzers in a modulator.

Response to Arguments

Applicant's arguments filed on 23 July 2007 have been fully considered but they are not persuasive.

Applicant's ONLY substantive arguments are as follows:

(1) Regarding base claims, applied prior art does not teach a transport influencer, operatively coupled to said optical transport and having at least a portion integrated with one or more guiding regions of said one or more guiding regions, for affecting said polarization property of said wave.

(2) Regarding base claims, applied prior art does not teach a component responsive to a control signal; and a second element for interacting with said affected wave component wherein an intensity of said wave component is varied responsive to said control signal".

(3) On-Off switching is not thought of as varying.

(4) Applied art does not teach integrated during manufacture.

(5) Applied art does not teach extinguishing mode.

(6) Dependent claims are allowable because they directly or indirectly depend from an allowable base claim.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that Dillon teaches a transport influencer [magnetic coil, col. 7, lines 34-38], operatively coupled to said optical transport and having at least a portion integrated with one or more guiding regions of said one or more guiding regions [integrated form per col. 1, lines 52-60], for affecting said polarization property of said wave component responsive to a control signal per rejections above.

Please note that variable isolators have long been well known to function as modulators, for convenience, please reference cited but not applied Tomita et al (Tomita) USPAT 5,245,465 [Abstract, Title, and entire disclosure]. The device structure limitations of Applicant's intended use limitations have been fully considered and are considered fully met by the applied prior art.

(2) It is respectfully pointed out that Dillon teaches a transport influencer [magnetic coil, col. 7, lines 34-38], operatively coupled to said optical transport and having at least a portion integrated with one or more guiding regions of said one or more guiding regions [integrated form per col. 1, lines 52-60], for affecting said

polarization property of said wave component responsive to a control signal per rejections above.

(3) It is respectfully pointed out that an obviousness rejection is not a "multi-reference 102" rejection. Clearly variability is rendered obvious by the ability to turn on and off an influencer, thereby turning on and off the affect of said influencer. Also, a square wave signal is certainly considered to be a signal that varies. Also please note that variable isolators have long been well known to function as modulators, for convenience, please reference cited but not applied Tomita et al (Tomita) USPAT 5,245,465 [Abstract, Title, and entire disclosure]. The device structure limitations of Applicant's intended use limitations have been fully considered and are considered fully met by the applied prior art. The device structure is not affected by whether the electric current is ramped up or turned on abruptly [method of using does not affect structure of the device].

(4) It is respectfully pointed out that when something is integrated as a finished device, it inherently must have been integrated during manufacture (at least during the final step), but something integrated during manufacture might not remain integrated in the final device. Examiner considers newly added limitations drawn to "during manufacture" to actually broaden claims to the point of being almost not further limiting.

(5) It is respectfully pointed out that an optical device wherein polarized light is at 90 degrees to the transmissive axis of a polarizer will result in extinguished transmission (output wave component may be extinguished [90 degrees to polarizer, col. 1, line 40]). Again, it is respectfully pointed out that an obviousness rejection is not a "multi-

reference 102" rejection. Clearly the teaching would render obvious the design alternative to vary the output to zero without undue experimentation and with high confidence of success. Examiner cannot see any reason why one of ordinary skill would find all the teachings and motivations needed to comprise any of a number of satisfactory optical devices to include those of all of Applicant's broad claims.

Please note that variable isolators have long been well known to function as modulators, for convenience, please reference cited but not applied Tomita et al (Tomita) USPAT 5,245,465 [Abstract, Title, and entire disclosure]. The device structure limitations of Applicant's intended use limitations have been fully considered and are considered fully met by the applied prior art.

(6) It is respectfully pointed out that in so far as Applicant has not argued rejection(s) of the limitations of dependent claim(s), Applicant has acquiesced said rejection(s).

Conclusion

Any references cited but not applied are relevant to the instant Application.

Applicant's amendment necessitated any new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY RUDE whose telephone number is (571)272-2301. The examiner can normally be reached on Increased Flex Time Program.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nelms C. David can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

tlr

/TIMOTHY RUDE/
Primary Examiner, Art Unit 2871